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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,953

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Tomiharu Hosaka

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EXAMINER

BUTCHER, BRIAN M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,953	Applicant(s) HOSAKA ET AL.	
	Examiner BRIAN BUTCHER	Art Unit 4113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>17 January 2006, 11 April 2006, 14 August 2008</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the ratio "(SH/SL) of the maximum recordable linear speed (SH) to the minimum recordable linear speed (SL) [having] a value or 2 to 3" and the ratio "(RG/RL) of the amount of light reflected from a groove (RG) in an unrecorded state to the amount of light reflected from a land (RL) in an unrecorded state [having] a value of at least 1.08 and no more than 1.19" without claiming the physical structure, material properties, etc. necessary to achieve the claimed ratios.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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Patentability shall not be negated by the manner in which the invention was made.

Claims 7 - 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa et al. (United State Patent Application Publication US 2004/0062189 A1) hereinafter referenced as Matsukawa, in view of Mizuno et al. (European Patent Application Publication EP 1 047 056 A1) hereinafter referenced as Mizuno.

Regarding **claim 7**, Matsukawa discloses an information storage medium that reads on the optical information recording medium claimed. First, Matsukawa discloses an optical disc having a spiral or concentric grooves and lands (page 2, paragraph [0026], lines 1 - 4, and figure 1) which reads on "having a land/groove structure" claimed. Second, Matsukawa discloses that information can be written to the optical disc at a speed from 3.49 m/sec to 7.0 m/sec (page 3, paragraph [0045], lines 1 - 6, and figure 1) which read on "being capable of recording at a plurality of linear velocities" claimed and which reads on "the ratio (SH/SL) of the maximum recordable linear speed (SH) to the minimum recordable linear speed (SL) [having] a value of 2 to 3" claimed because 7.0 m/sec (maximum recordable linear speed) divided by 3.49 m/sec (minimum recordable linear speed) equals slightly greater than 2 which falls with the range from 2 to 3. However, Matsukawa fails to disclose "the ratio (RG/RL) of the amount of light reflected from a groove (RG) in an unrecorded state to the amount of light reflected from a land (RL) in an unrecorded state [having] a value of at least 1.08 and no more than 1.19". The examiner maintains that it was well known in the art for the information storage medium disclosed in Matsukawa to include having the ratio

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RG/RL greater than one and falling in the range from 1.08 to 1.19", as taught by Mizuno.

In a similar field of endeavor Mizuno discloses that is well known in the art for an optical recording medium to have a RGb (reflection before recording in groove) greater than RLb (reflection in land before recoding) (page 28, paragraph [0353] , lines 1 -4) which reads on "the ratio (RG/RL) of the amount of light reflected from a groove (RG) in an unrecorded state to the amount of light reflected from a land (RL) in an unrecorded state [having] a value of at least 1.08 and no more than 1.19" because the ratio RGb/RLb will be greater than 1 where RGb is greater than RLb and the range 1.08 to 1.19 is greater than 1.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the information storage medium of Matsukawa by specifically using the teachings in Mizuno to include "the ratio (RG/RL) of the amount of light reflected from a groove (RG) in an unrecorded state to the amount of light reflected from a land (RL) in an unrecorded state [having] a value of at least 1.08 and no more than 1.19" because one having ordinary skill in the art would want to reduce jitter, to increase the modulation or to widen the width of amorphous marks to be recorded in the groove (see Mizuno page 28, paragraph [0353], lines 3 – 4).

Regarding **claim 8**, Matsukawa and Mizuno, the combination of hereinafter referenced as MM, disclose everything claimed as applied above (see claim 7), in addition MM disclose an information storage medium that utilizes a light source with a wavelength of 600 - 700 nm and a numerical aperture of 0.55 to 0.7. Specifically,

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Matsukawa discloses that an information storage medium is rotated in a read/write device and illuminated with a laser beam wavelength of 600 to 700 nm through an objective lens having a numerical aperture of 0.55 to 0.70 (page 3, paragraph [0041], lines 1 - 8, and figure 1) which reads on “the amount of light reflected from the groove (RG) and the amount of light reflected from the land (RL) are measured by optical units in which the light source has a wavelength of 660 ± 10 nm and a numerical aperture of 0.6 ± 0.01 ” claimed because a wavelength of 660 ± 10 nm falls within the range from 600 to 700 nm and a numerical aperture of 0.6 ± 0.01 falls with the range from 0.55 to 0.70.

Regarding **claim 9**, Matsukawa and Mizuno, the combination of hereinafter referenced as MM, disclose everything claimed as applied above (see claim 7), in addition MM disclose an information storage medium where recoding and reproduction is performed using a phase change in a land/groove structure. Specifically, Matsukawa discloses an information storage medium that is recorded and reproduced by way of a phase-change recording layer in the grooves (page 1, paragraph [0013], lines 1 - 13, and figure 1) which reads on “the recording or reproduction of information is performed by utilizing a phase change in the land/groove structure” claimed.

Regarding **claim 10**, Matsukawa and Mizuno, the combination of hereinafter referenced as MM, disclose everything claimed as applied above (see claim 7), in addition MM disclose an information storage medium where the ratio WG/TP is greater than 0.5 and less than 0.6. Specifically, Mizuno discloses that the groove pitch can be adjusted from 0.6 to 0.8 μm (page 28, paragraph [0349], lines 1 - 2) and that for the condition where R_Gb is greater than R_Lb, the groove width can be adjust from 0.4 to 0.5

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μm (page 28, paragraph [0353], line 4) which reads on “the ratio (WG/TP) of the groove half-value width (WG) to the track pitch (TP) [having] a value that satisfies $0.50 < (\text{WG}/\text{TP}) < 0.60$ ” claimed because for a groove width of $0.41 \mu\text{m}$ divided by a groove pitch of $0.8 \mu\text{m}$, for example, the ratio WG/TP is greater than 0.50/ less than 0.60 and for a groove width of $0.47 \mu\text{m}$ divided by a groove pitch of $0.8 \mu\text{m}$, for example, the ratio WG/TP is less 0.60 and greater than 0.50.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the information storage medium of Matsukawa by specifically using the teachings in Mizuno to include “the ratio (WG/TP) of the groove half-value width (WG) to the track pitch (TP) [having] a value that satisfies $0.50 < (\text{WG}/\text{TP}) < 0.60$ ” because one having ordinary skill in the art would want to widen the width of amorphous marks to be recorded in the groove (see Mizuno page 28, paragraph [0353], lines 3 – 4).

Regarding **claim 11**, Matsukawa and Mizuno, the combination of hereinafter referenced as MM, disclose everything claimed as applied above (see claim 10), in addition MM disclose an information storage medium where the preferred groove depth is 33 nm to 66 nm based on a reference value of 1 for the refractive index of the material. Specifically, Mizuno discloses a preferred groove depth from $\lambda/20n$ to $\lambda/10n$ where λ is the wavelength of the light illuminated onto the medium and n is the refractive index of the material at hand and an example of a groove depth from 25 to 40 nm is given. (pages 27 - 28, paragraphs [0348] – [0349]) which reads on “the depth of the groove [being] from 40 to 65 nm” claimed because the depth will fall in the range

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from 40 to 65 nm depending on the refractive index of the material being used in the storage medium.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the information storage medium of Matsukawa by specifically using the teachings in Mizuno to include "the depth of the groove [being] from 40 to 65 nm" because one having ordinary skill in the art would want to ensure that a push-pull signal can be detected by a tracking servo and ensure that the tracking servo is stabilized during retrieving (see Mizuno pages 27 - 28, paragraphs [0348], lines 1 - 4)

Regarding **claim 12**, Matsukawa and Mizuno, the combination of hereinafter referenced as MM, disclose everything claimed as applied above (see claim 7), in addition MM disclose an information recoding and reproduction system to be used with the information storage medium. Specifically, Matsukawa discloses an information read/write device (page 3, paragraph [0041], lines 1 - 18). First, the read/write device reads on "being capable of recording at a plurality of linear velocities" claimed because the device rotates the medium at linear speed ranging from 3.49 m/sec to 7.0 m/sec. Second, the read/write device reads on "comprising optical units in which the light source has a wavelength of 660 ± 10 nm and a numerical aperture (NA) of 0.6 ± 0.01 " claimed because the wavelength of laser irradiated from a built-in semiconductor laser ranges from 600 to 700 nm and the numerical aperture of the objective lens focusing the laser beam ranges from 0.55 to 0.60. Third, the read/write device reads on "recording and reproduction are possible when the ratio (SH/SL) of the maximum

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recordable linear speed (SH) to the minimum linear speed (SL) has a value of 2 to 3" because 7.0 m/sec (maximum recordable linear speed) divided by 3.49 m/sec (minimum linear speed) equals slightly greater than 2 which falls with the range from 2 to 3.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian M. Butcher whose telephone number is (571) 270 – 5575. The examiner can normally be reached on Monday - Friday 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Jefferey F. Harold can be reached at (571) 272 – 7519. The fax phone number for the organization where this application or proceeding is assigned is (703) 872—9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305 – 4800.

BMB
August 29, 2008
/Jefferey F Harold/

Supervisory Patent Examiner, Art Unit 4113